HEMORRHAGIC SHOCK

Historical Findings

1. History of or suspected hemorrhage

Physical Findings (One or More):

1. Active severe bleeding with signs of shock OR
2. Signs of poor tissue perfusion such as abnormal mental status, cool clammy skin, delayed capillary refill, weak or absent radial pulse OR
3. A. Systolic blood pressure < 90 mm Hg in an adult OR
   B. Child age 5-10 systolic BP < 85 mm Hg OR
   C. Child age < 5 systolic BP < 75 mm Hg.

Protocol

1. Maintain airway and administer high flow oxygen by non-rebreather face mask at 10 L/min.
2. Aggressively manage the airway. Intubate with C-spine control if the patient will tolerate the attempt. **If airway is compromised and prehospital personnel are unable to establish a patent airway, refer to Rapid Sequence Intubation Protocol.**
3. Identify and treat life-threatening breathing problems such as open chest wounds. For treatment of tension pneumothorax see Tension Pneumothorax protocol.
4. If patient is a victim of blunt trauma (i.e. MVA, fall) or penetrating injury to head or neck, immobilize patient with rigid cervical collar, long back board, and immobilize head such that the patient's head is secured to back board. When time of transport to definitive care is more than 30 minutes, then apply MAST, but do not inflate.
5. Control external bleeding.
6. Begin transport as soon as possible to destination hospital as directed in Trauma Triage Protocol.
7. Monitor heart, obtain vital signs, evaluate breath sounds and level of consciousness.
8. Without stopping transport, initiate 1-2 large bore IV's of normal saline with blood draw if possible. Give 500-1000 ml wide open or 20 ml/kg in a child.
9. Reassess vital signs, perfusion status, and lung sounds at least every 5 minutes. Watch for signs of fluid overload.
10. Contact Medical Command with abbreviated report while en route.
11. Medical command physician will instruct on additional fluid administration.
12. Medical command physician will instruct on MAST inflation.
13. Continue secondary assessment as time permits.

Notes

1. The key to good prehospital care of the hemorrhagic shock patient is rapid transport to definitive care. Except when the patient is entrapped, scene time should not ordinarily exceed 15 minutes.[1]
2. A reasonable performance goal for an EMS system is that 90% of patients who have traumatic shock and are not entrapped should be delivered to a definitive trauma care facility within 30 minutes from the time of injury.[2]
3. Patients with penetrating chest trauma and abnormal vital signs are especially in need of immediate transport to definitive care. Early intubation of these patients improves outcome.
4. Application and inflation of MAST at the scene has been shown to add about 4 minutes to scene time without improving outcome. MAST use is contraindicated in penetrating chest trauma.

June 29, 2003

Approved Miami Township Fire & EMS Medical Director, October 1998

[1] Pepe PE, Stewart RD, Copass MK. Prehospital management of trauma: A tale of three cities. **Ann Emerg Med** 1986; 15:1484-1490.

[2]Johnson JC. Prehospital care: The future of emergency medical services. **Ann Emerg Med** 1991; 20:426-430.

Miami Township Fire & EMS

CLERMONT COUNTY, OHIO

SURGICAL / TRAUMA PROTOCOLS **-SUR 3 -**

HIGH RISK POTENTIAL

This protocol is for use in those patients with the potential to deteriorate rapidly due to a significant mechanism of trauma or underlying medical condition.

Historical Findings

1. History of:
   - A. Penetrating wound,
   - B. Pedestrian struck by vehicle,
   - C. Fall greater than 10 feet,
   - D. MVA with significant damage to vehicle,
   - E. MVA with rollover, patient entrapment or patient ejection,
   - F. Evidence of significant blunt force to the patient (e.g. "starred windshield, deformity to dashboard or steering wheel),
   - G. Motorcycle accident,
   - H. Gastrointestinal bleeding,
   - I. Severe abdominal pain,
   - J. Significant dehydration, OR
   - K. Other medical or traumatic condition which, in the paramedic's judgement, has a high risk for deterioration in the patient's condition.

Physical Findings

1. No signs of shock. If shock is present, refer to Hemorrhagic Shock protocol.

Protocol

1. Maintain airway and immobilize spine as needed.
2. Apply oxygen at high flow and high concentration preferably by non-rebreather face mask at 10 L/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
3. **If airway is compromised and prehospital personnel are unable to establish a patent airway, refer to Rapid Sequence Intubation Protocol.**
4. Obtain vital signs and place on cardiac monitor.
5. If signs of progressive tension pneumothorax, see Tension Pneumothorax Protocol. An order from Medical Command is usually required for this procedure.
6. Begin transport.
7. If appropriate, initiate large bore IV of normal saline to run at keep open rate.
8. Notify the receiving hospital.

9. Medical command may order fluid bolus, different IV rate, MAST, or medications as needed.
10. If patient develops shock, proceed to shock protocol.

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Approved Miami Township Fire & EMS Medical Director, October 1998.

HEAD OR SPINAL TRAUMA

Historical Findings

1. History of loss of consciousness following head injury, OR
2. History of motor vehicle accident, diving accident, fall, or other trauma.

Physical Findings

1. Head contusions, abrasions, or lacerations, OR
2. Fluid or blood from nose, ears, or mouth, OR
3. Altered mental status.
4. May have loss of sensation or movement.
5. May have pain in back or neck.
6. No signs of shock. If shock is present, refer to Hemorrhagic Shock protocol.

Protocol

1. Control airway and administer oxygen at high flow and high concentration, preferably by non-rebreather face mask at 10 L/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. If altered mental status, aggressively assure good oxygenation of patient and intubate with C-spine control. If head injury, hyperventilate at 20 breaths/minute (for a child hyperventilate at 30 breaths/minute).
3. Obtain Glasgow Coma Scale and perform neurological exam.
4. If Glasgow Coma Scale is less than 9 and airway is unstable, consider Rapid Sequence Intubation with paralytics (See protocol)
5. Immobilize patient with rigid cervical collar, long back board, and immobilize head such that the patient's head is secured to back board.
6. Begin transport as soon as possible to destination hospital as directed in Trauma Triage Protocol.
7. Obtain vital signs and monitor cardiac rhythm.
8 Start large bore IV of normal saline at keep open rate and obtain blood.
9. If hypoglycemia is suspected, then check glucose. If glucose is < 60, then administer 25 gms of D50 (child < 6 years of age, refer to APPENDIX B for glucose dosage).
10. If narcotic overdose is suspected, administer 2 mg naloxone (Narcan) IV push.
11. **Only on the order of the medical command physician**; For Spinal Injury with signs and symptoms of cord injury in the absence of head injury administer methylprednisolone (Solu-Medrol) 30 mg/kg slow IVP.
12. If there is an eye injury, then see Eye Injury Protocol

Notes

1. Shock is not usually due to head injuries. If patient is in shock, consider another cause for the hypotension.

2. Remember that restlessness can be due to hypoxia and shock not just head injury.

3. In any multiple trauma patient, spine trauma should be assumed until proven otherwise in a hospital emergency department.

4. If the patient is less than or equal to four years of age, then obtain either the pediatric Glasgow Coma Scale or assess level of consciousness using the AVPU Scale.

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MAJOR BURNS (Thermal or Electrical)

Historical Findings

1. Patient complains of shortness of breath, cough, or hoarseness.
2. Any patient with electrical injury.

Physical Findings

1. Second degree burns greater than 20% of body surface area, OR
2. Third degree burns greater than 15% of body surface area, OR
3. Singed nasal or facial hair, soot or erythema of mouth, or respiratory distress.

Protocol

1. Evaluate scene for safety.
2. Remove patient from source of burn including clothing.
3. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather face mask at 10 L/min.
4. If patient is unconscious or has any respiratory distress, intubate immediately.
5. Obtain vital signs and place on cardiac monitor.
6. Initiate IV of normal saline at keep open rate.
7. Remove all protheses, rings, and constricting bands from all extremities.
8. Cover burns with clean, dry sheet.
9. **Pain relief as per Severe Pain Management Protocol.**
10. Transport patient to an appropriate facility capable of treating major burns.
11. Notify the receiving facility .

Notes

1. Consider carbon monoxide poisoning if the patient has headache, dizziness, nausea, vomiting, decreased mental status, syncope, or chest pain or was trapped in a closed space.
2. Remember that burn victims have often suffered other trauma. These patients should primarily be managed as multiple trauma patients.
3. Important historical information includes any inhalation problem or closed space exposure, duration of exposure and time elapsed since burn, chemical exposure, and significant past medical problems.

4. Remember to keep the burned patient warm. It is important to avoid hypothermia since the skin injury disables much of the body's heat conservation methods. Only burns of less than 10% of body surface area should be treated with local cooling such as wet dressings.[1]
5. While many burn patients will require large amounts of IV fluid over the first 24 hours, they do **not** require large boluses of IV fluid prior to arrival at the hospital. It is easy to fluid overload the burn patient.

June 29, 2003

Approved Miami Township Fire & EMS Medical Director, July 1998

[1] Porter RS. Soft tissue trauma and burns. In Bledsoe BE, Porter RS, Shade BR (Eds): **Paramedic Emergency Care**. Prentice-Hall, Englewood Cliffs, NJ. 1991, p 524.

IMMINENT DELIVERY

Historical Findings

1. Pregnant woman who is in active labor as defined by regular, frequent uterine contractions and who feels the urge to push.

Physical Findings

1. Crowning of fetal part at vaginal opening with imminent delivery.

Differential Diagnosis

1. Delivery not imminent.

Protocol

1. Assure airway patency and administer O_2 at high flow and high concentration, preferably by non-rebreather face mask at 10 L/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. Obtain vital signs and begin transport.
3. If time permits, establish IV access with one large bore catheter (16 gauge preferred) and begin normal saline at keep open rate
4. Assist with normal delivery.
5. If baby is delivering in malpresentation (e.g. foot or arm), elevate hips of mother and transport immediately.
6. If cord is prolapsed:
   a. Relieve pressure on the cord with hand in vagina to maintain head of baby off cord.
   b. Elevate hips of mother.
   c. Keep cord moist
   d. Transport
7. If cord is wrapped about neck:
   a. Attempt manual removal
   b. If unsuccessful, then cut cord after clamping prior to completing delivery.
8. After the infant's head is delivered, suction the mouth, oropharynx, then nose.
9. After complete delivery, provide routine newborn care with special attention to maintenance of infant body temperature. Place infant on oxygen and suction if needed. Refer to newborn resuscitation protocol if needed.

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10. Apply local pressure to any visible bleeding sites.
11. Contact medical command if any complication has occurred. Otherwise, notify the receiving hospital.
12. Resume transport to hospital with labor and delivery service.
13. If a complication such as massive bleeding or neonatal distress occurs, proceed to nearest appropriate hospital.
14. Assist with delivery of placenta and begin fundal massage.

Notes

1. Only deliver the placenta when it has detached. Do not pull on the umbilical cord to force out the placenta as this can lead to retained placenta or uterine eversion.

2. Pregnant teenagers with vaginal bleeding or imminent delivery should be taken to a hospital with a labor and delivery service. If uncertain where patient should be taken, then contact medical command.

June 29, 2003

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EYE INJURY

Historical Findings

1. History of actual or suspected eye injury.
2. MAY have foreign body sensation or pain in eye.

Physical Findings

1. MAY have visible foreign body or visible globe laceration.
2. MAY have light sensitivity.
3. MAY have poorly reactive or non-reactive pupil.

Protocol

1. If there is an impaled object, then stabilize it in place.
2. If there is evidence of a penetrating eye injury such as visible globe laceration or fluid draining from the globe, then cover the affected eye with a *metal* eye patch. Do not press on the globe.
3. If the patient has a chemical exposure to the eye or a non-penetrating foreign body in the eye, then proceed in the following manner:
   a. Instill two drops of 0.5% proparacaine (Alcaine) or tetracaine into the affected eye.
   b. Warn the patient not to rub the eye while the cornea is anesthetized, since this may cause corneal abrasion and greater discomfort when the anesthesia wears off.
   c. If there has been a chemical exposure, then begin eye irrigation by instilling copious amounts of tap water or normal saline solution.
   d. After 20 minutes, a second dose of proparacaine may given if needed.

Notes

1. Remember that eye injuries can cause a great deal of patient anxiety. Provide reassurance.
2. The time until onset of anesthesia after proparacaine instillation ranges from 6 to 20 seconds.
3. Local instillation in the eye rarely produces adverse effects. System reactions are unlikely when used in recommended doses.
4. When not contraindicated by other injuries or need for spinal immobilization, then transport the patient with the head of the bed elevated at least 30 degrees.

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